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WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:  
a rotatable latent image bearing member for bearing a latent image;  
5 charging means contacting with said latent image bearing member and is given a voltage for charging said latent image bearing member;  
cleaning means contacting with said latent image bearing member and is adapted to clean said  
10 latent image bearing member;  
AC current detecting means capable, when a first AC voltage capable of having plural different peak-to-peak voltages is applied to said charging means, of detecting an AC current flowing between  
15 said charging means and said latent image bearing member;  
wherein a peak-to-peak voltage of a charging AC voltage applied to the charging means for charging an area constituting an image forming area on said  
20 latent image bearing member is selected based on an AC current detected by said AC current detecting means; and  
said charging means is given, after an application of said first AC voltage and before an  
25 application of said charging AC voltage, a second AC voltage having a peak-to-peak voltage larger than the peak-to-peak voltage of said first AC voltage.

2. An image forming apparatus according to claim 1, wherein said charging peak-to-peak voltage is selected when said AC current reaches a predetermined AC current.

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3. An image forming apparatus according to claim 2, wherein, after of said charging peak-to-peak voltage is selected, a next charging peak-to-peak voltage is selected before said AC current reaches  
10 said predetermined AC current.

4. An image forming apparatus according to claim 1, wherein said first AC voltage is provided with an AC voltage having a peak-to-peak voltage  
15 which is lower by a step than said charging peak-to-peak voltage applied previously.

5. An image forming apparatus according to claim 1, wherein said second AC voltage is applied  
20 when said charging means is brought into contact with an area constituting a non-image forming area of said latent image bearing member.

6. An image forming apparatus according to  
25 claim 1, wherein a peak-to-peak voltage of said second AC voltage is a maximum peak-to-peak voltage among the peak-to-peak voltages of the AC voltages

applicable to said charging means.

7. An image forming apparatus according to claim 5, further comprising:

5        transfer means which applies a transfer voltage for transferring, to a transfer medium, a developer image developed with a developer in said image forming area;

         wherein a DC voltage of a polarity opposite to  
10    a normal charging polarity of said latent image bearing member is applied to said transfer means, when an area of said latent image bearing member, charged by the application of said second AC voltage to said charging means, is present in a portion in  
15    contact with said transfer means.

8. An image forming apparatus according to claim 7, wherein said transfer voltage is determined based on a current flowing between said latent image  
20    bearing member and said transfer means when said DC voltage is applied to said transfer means.

9. An image forming apparatus according to claim 1, wherein, when said second AC voltage is  
25    applied to said charging means, a discharged AC charge amount  $\delta a$  per unit area satisfies a following condition:

$$\delta a \geq 2600 [\mu A \times \text{sec}/m^2]$$

and said  $\delta a$  is defined by:

$$\delta a [\mu A \times \text{sec}/m^2] = ((I_{ac} - \alpha \times V_{pp})/L)/V_{ps}$$

in which:

5       $V_{ps}$  [m/sec] is a moving speed of said latent image bearing member;

$V_{pp}$  [V] is a peak-to-peak voltage of said second AC voltage;

10       $I_{ac}$  [ $\mu A$ ] is said AC current flowing between said charging means and said latent image bearing member;

$L$  [m] is a longitudinal charging width of said charging means;

$\alpha$  represents AC voltage-current characteristics when said latent image bearing member and said  
15      charging means are in mutual contact and is a ratio  $I_{ac}/V_{pp}$  of said AC current  $I_{ac}$  to the peak-to-peak voltage  $V_{pp}$  in a region not exceeding twice of a charging starting voltage  $V_{th}$ .

20      10. An image forming apparatus according to claim 9, wherein, when said charging AC voltage is applied, a discharged AC charge amount  $\delta b$  per unit area between said charging means and said latent image bearing means satisfies a following condition:

25       $\delta b \geq 1200 [\mu A \times \text{sec}/m^2]$  and

$$\delta a > \delta b,$$

and said  $\delta b$  is defined by:

$$\delta b [\mu A \times \text{sec}/m^2] = ((I_{ac}' - \alpha \times V_{pp}')/L')/V_{ps}'$$

in which:

$V_{ps}'$  [m/sec] is a moving speed of said latent image bearing member;

5  $V_{pp}'$  [V] is a peak-to-peak voltage of said charging AC voltage;

$I_{ac}'$  [ $\mu A$ ] is said AC current flowing between said charging means and said latent image bearing member;

10  $L'$  [m] is a longitudinal charging width of said charging means;

$\alpha$  represents AC voltage-current characteristics when said latent image bearing member and said charging means are in mutual contact and is a ratio  $I_{ac}/V_{pp}$  of said AC current  $I_{ac}$  to the peak-to-peak voltage  $V_{pp}$  in a region not exceeding twice of a charging starting voltage  $V_{th}$ .

11. An image forming apparatus according to claim 1, wherein said first AC voltage is applied to  
20 said charging means during a time equal to or longer than a time of a turn of said latent image bearing member.

12. An image forming apparatus according to  
25 claim 1, wherein said second AC voltage is applied to said charging means during a time equal to or longer than a time of a turn of said latent image bearing

member.

13. An image forming apparatus comprising:  
a rotatable latent image bearing member for  
5 bearing a latent image;  
charging means contacting with said latent  
image bearing member and is given a voltage for  
charging said latent image bearing member;  
cleaning means contacting with said latent  
10 image bearing member and is adapted to clean said  
latent image bearing member;  
AC current detecting means capable, when said  
voltage is applied to said charging means, of  
detecting an AC current flowing in said charging  
15 means and said latent image bearing member;  
transfer means contacting with said latent  
image bearing member and is given a transfer voltage  
for transferring, to a transfer medium, a developer  
image developed with a developer in an image forming  
20 area;  
wherein said charging means, when in contact  
with an area constituting an image forming area of  
said latent image bearing member, is given an AC  
voltage for a non-image forming area having a peak-  
25 to-peak voltage larger than a peak-to-peak voltage of  
a charging AC voltage applied to said charging means  
for charging an area constituting the image forming

area; and

when an area of said latent image bearing member, charged by said AC voltage for non-image forming area applied to said charging means, comes  
5 into contact with the transfer means, a DC voltage of a polarity opposite to a normal charging polarity of said latent image bearing member is applied to said transfer means.

10 14. An image forming apparatus according to claim 13, wherein said transfer voltage is determined, based on said DC voltage.

15 15. An image forming apparatus according to claim 13, wherein said transfer voltage is determined, based on a current flowing between said latent image bearing member and said transfer means when said DC voltage is applied to said transfer means.

20 16. An image forming apparatus according to claim 13, wherein a peak-to-peak voltage of said AC voltage for non-image forming area is a maximum peak-to-peak voltage among the peak-to-peak voltages applicable to said charging means.

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17. An image forming apparatus according to claim 13, wherein said AC voltage for non-image



forming area is applied to said charging means during a time equal to or longer than a time of a turn of said latent image bearing member.

5           18. An image forming apparatus according to claim 5, wherein an area constituting said non-image forming area is an area of said latent image bearing member in an initial rotation step prior to an image formation.

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          19. An image forming apparatus according to claim 18, wherein, when a time of said initial rotation step varies, the time of application of said second AC voltage to said charging means varies but  
15 the time of application of said first AC voltage to said charging means does not vary.

          20. An image forming apparatus according to claim 1 or 13, further comprising a power supply  
20 circuit, wherein said power supply circuit outputs an AC and DC superposed voltage to said charging means by single voltage-elevating means.